



# Ancilla College

## Course Syllabus – ASTR110 – General Astronomy (5cr) Spring 2013

Section	Days / Time	Location	Contact Hours	Expected Homework Hours
ASTR-110 - 01	Independent	Online	Online	75.0 (4-6 hrs./week)

**Instructor:** Gerard Arthus - Adjunct Instructor. **Phone:** Home (574) 217-8726 Cell 631-335-5250  
**E-Mail:** [garthus801@gmail.com](mailto:garthus801@gmail.com) **Office Hours:** by appointment only (email me to set-up a time)  
between 1:15pm to 7:30pm

### Required Materials (available at the [Ancilla Bookstore](#))

1. Optional Text (not required to buy):  
Horizons: Exploring the Universe, 12th Edition  
Michael A. Seeds - Franklin and Marshall College  
and Dana Backman 11<sup>th</sup> Edition  
ISBN-10: 1111430209 ISBN-13: 9781111987107
2. Text to be provided:  
AAVSO Variable Star Astronomy  
American Association of Variable Star Observers  
2008 ISBN 1-878174-25-8
3. Virtual Lab access available through key obtained from the bookstore "CengageNOW Virtual Astronomy Labs 2.0 Printed Access Card" ISBN 13: 9781111987107 at:  
<http://val.brookscole.com/>
4. A computer with Internet Access. There will be On-line chat-room discussions in this course which will have required attendance by each student.
5. Students will have to access the Ancilla Moodle course portal at:  
<http://ancilla.learninghouse.com/>

### Course Description

This survey course introduces the student to the fundamental aspects of Astronomy. The student will examine the known natural processes occurring within the universe and how they relate to our place in the universe. Students will compare the Earth's characteristics with those of the other planets and explore how the heavens have influenced human thought and behavior. Astronomical phenomena will be explored along with the many standard topics including: planets, stars, the Milky Way and other galaxies and black holes to more esoteric questions concerning the origin of the universe and its evolution and fate. The course will occasionally require the use of sophomore high school level mathematics. In the laboratory requirements, exercises will include experiments in light properties, measurement of Kepler's Laws, understanding radiation from celestial sources, and observations from the Hubble Space Telescope. Lecture and text material will be supplemented with URL reference handouts that add a broader perspective of information to the textual content of the core objective.

This is an **On-Line Course**. Thus, much of the Lecture Material and Labs will be delivered over the internet utilizing a Moodle Interface. The Moodle Interface is designed to be as simple and intuitive as possible allowing for the student to have ease of interaction with it. There will be no traditional class meetings; however students will be able to meet with the Instructor during regular Office hours as designated above; by appointment in advance; and meetings will be held in chatroom sessions at scheduled and as-needed times.

**On-Line Labs:** The Brooks/Cole product *Virtual Astronomy Laboratories*, consists of virtual online astronomy laboratories (*VLabs*) representing a sampling of interactive exercises that illustrate some of the

most important topics in introductory astronomy. The exercises are meant to be representative, not exhaustive, since introductory astronomy is too broad to be covered in only one introductory class. Material is approximately evenly divided between that commonly found in the Solar System part of an introductory course and that commonly associated with the stars, galaxies, and cosmology part of such a course.

### Course Goals

The goal of this course is to provide the student with a basic understanding of the principles of Astronomy. This course is Lab and Project oriented. Students will use these programs to present their research by producing various documents and presentations. It will be assumed that students have a basic understanding of how computers work and have had some Internet experience. **Students who do not have this basic knowledge should talk to their advisor or instructor immediately and are advised to not take ASTR110 as an online course. The other option is that the student may meet with the instructor during office hours and a review of these basic skills will be conducted.**

### Academic Core Values addressed in this course

The work in this course, like all courses at Ancilla College, is guided by the idea that all students who graduate from the College must demonstrate that they can:

1. Identify and solve problems using critical thinking.
2. Speak and present information in varied contexts.
3. Create and present information in formal written formats.
4. Recognize and critique significant historical, political, social or cultural forces that shape society.
5. Analyze and solve quantitative problems using mathematical reasoning.
6. Apply the scientific method and evaluate how science acquires new knowledge.
7. Identify and use appropriate computer and communication technologies.
8. Articulate ethical values and employ moral reasoning in decision-making.

### Student Learning Objectives

Through lab projects and instructor-led demonstrations and discussions, students will be able to demonstrate the basic core objectives including:

- The student should exhibit a basic understanding of Astronomical principles.
- Create a final project using skills learned throughout the semester.
- Conceptualize the structure of the solar system and the universe.
- Classify and explain the reason for the differences between the planets in our solar. System and, stars in the sky and types of galaxies in the universe.
- Construct drawings correlating various planetary, stellar and galactic motions.
- Trace the evolution of stars and the universe.
- Relate the earth, our sun, our galaxy and in general, our location to the rest of the universe.

**Method of  
Measuring  
Student Learning**

**Grading  
Scale**

At the completion of this course, students will be able to demonstrate their knowledge & skills through:

- Active participation in the course discussion forums.
- Active participation in the course Chat-rooms.
- Completion of homework and project files for labs and assignments.
- Knowledge of Astronomical concepts through Virtual Labs, skills exams and quizzes

**A. GRADING SCALE**

**A (95-100) A- (90-94)**

Superior work, distinguished by comprehensive mastery of learning objectives, timely production and exceptionally high quality of content, presentation, and/or performance as demonstrated by grades on assignments, projects, examinations and other evaluated work. Indicates a high degree of motivation, self-reliance and responsibility.

**B+ (86-89) B (84-85) B- (80-83)**

Above average work, demonstrating a clear understanding of the objectives and expectations of the course. Demonstrates generally high quality of content, presentation, and/or performance as demonstrated by grades on assignments, projects, examinations and other evaluated work.

**C+ (75-79) C (70-74)**

Satisfactory work, demonstrating a general competence in satisfying the learning objectives and expectations of the course. Demonstrates understanding of basic course content as demonstrated by grades on assignments, projects, examinations and other evaluated work.

**D (60-69)**

Marginally acceptable work, indicating difficulty in achieving the learning objectives and expectations of the course. Understanding of basic course content is impaired as demonstrated by grades on assignments, projects, examinations and other evaluated work.

**F (Below 60)**

Unacceptable work, indicating serious difficulty in achieving the learning objectives and expectations of the course. Understanding of basic course content is seriously lacking as demonstrated by grades on assignments, projects, examinations and other graded work.

**Evaluation  
and Assessment**

**B. EVALUATION (ASSESSMENTS AND GRADE PERCENTAGES)**

Participation: Forum posts, tutorials	160 points	16%
Concept Review Quizzes	340 points	34%
Exams & projects	240 points	14%
Lab reports	100 points	20%
Final Exam	160 points	16%
<b>Total</b>	<b>1000 points</b>	<b>100%</b>

**Final Exam**

This exam will be comprehensive and will consist of multiple choice, and matching questions.

**Make-up Policy**

The student's grade **may** be reduced, regardless of the quality of the work, if the work submitted is late, incomplete or insufficient. Due dates are detailed on the Moodle Course page. It is acceptable for students to submit their work in advance of the listed due dates. Students are encouraged to consult with the instructor if they have concerns over any part of an assignment. This does not mean having the instructor review the entire assignment. Neither the final project nor the Final exam may be made up or postponed after the class is over, with few exceptions. Acceptance of make-up exams and late submission of assignments is at the discretion of the instructor.

<b>Course Work</b>	<p>All assigned work, exams and the final project must be completed to receive a passing grade for this class. There will be no exceptions. It is the student's responsibility to know whether they have completed the assignments, projects, and other course requirements and verify the record of grades received in Moodle. You are expected to read each assigned section of the text, the special assigned readings (usually in the form of web-links), and watch recommended video clips and complete all of the assigned labs. PowerPoint presentations outlining each chapter in the text will be available. They address the highlights of the topics for that week's work, but do not address everything the student needs to know for that section and are not intended to replace the reading of the textbook. Plan to spend at least <b>four to six hours</b> each week working at a computer, on your class work.</p> <p>Completed project files must be uploaded to the Moodle course site and received before 11pm EST on Sunday of the week that they are due. Any files received after this time will be considered late and grades <b>may</b> be reduced by at least 10% per week. Remember that the computer will both date and time stamp your uploads to Moodle and your e-mails.</p>
<b>Extra Credit</b>	<p>Extra credit work may be assigned at the instructor's discretion.</p>
<b>Participation Policy</b>	<p>Considerable time and effort has been spent in designing this course in order to provide students with a coherent and effective preparation for their careers. The instructor devotes much time and energy to preparing and teaching this course, designing appropriate assignments and examinations, and evaluating students' progress. Excessive absence in a course can seriously threaten a student's academic progress, even in an online class (please note that all attendance on the Moodle site is fully logged and recorded). The instructor is under no obligation to offer extraordinary assistance to students who are persistently "absent". Absence in an online course is viewed as inactivity during any 7 day period, lack of participation, little communication with the instructor via email or online messages sent through the Moodle course.</p>
<b>Academic Honesty</b>	<p>Academic integrity means that students may not submit work that is not their own in any manner (research papers, exams, oral reports, computer reports, etc.) This includes plagiarism and cheating. Permitting other students to use one's work as their own also violates the principle of academic integrity. As specified in all syllabi, Ancilla College stresses the importance of academic integrity. Because all colleges and universities value academic integrity highly, they treat violations very seriously. A first offense may result in a failure on the assignment or possibly in the course, depending upon the specific situation. The ultimate sanction is dismissal from the College. All honor violations will be reported to the Academic Dean. The published guidelines, located in the <a href="#">Course Catalog</a>, will be followed as designated.</p>
<b>Disabilities Policy</b>	<p>If you have any disability that may require accommodation, or if you have questions related to any accommodations, please speak with a Center for Student Achievement Lab staff member as soon as possible. The Center for Student Achievement Lab is located in Room 204 and may be reached by phone at (574) 936-8898, ext. 302. Please be advised that in order to receive services, you must complete the voluntary disclosure and accommodations request process.</p>

**Academic Core Values**

With a strong emphasis on academic excellence, the teaching/learning process, and personalized student service, Ancilla College provides a positive environment for the physical, intellectual, emotional, and spiritual growth of each student, so that Ancilla College graduates will:

1. Identify and solve problems using critical thinking.
2. Speak and present information in varied contexts.
3. Create and present information in formal written formats.
4. Recognize and critique significant historical, political, social or cultural forces that shape society.
5. Analyze and solve quantitative problems using mathematical reasoning.
6. Apply the scientific method and evaluate how science acquires new knowledge
7. Identify and use appropriate computer and communication technologies.
8. Articulate ethical values and employ moral reasoning in decision-making.

**Ancilla College Mission Statement**

Ancilla College is a liberal arts institution of higher learning sponsored by the Poor Handmaids of Jesus Christ. The college's religious tradition is Roman Catholic; its climate ecumenical. In a caring environment, Ancilla serves a diverse population, as we transform and empower students to achieve high academic goals, lifelong learning, successful careers and values centered lives.

Questions may be posted in the "Water Cooler" discussion forum in Moodle or emailed. Emails must have the course number in the subject or they will be deleted as spam. For example, your subject line could be written as: **ASTR110-01, Question on final project.** Any questions should be emailed to [garthus801@gmail.com](mailto:garthus801@gmail.com) with an appropriate subject line.

Plan to spend at least four to six hours each week working at a computer on your course work.

	Topics covered this week and expected learning outcomes	Activities and Assignments	Graded Assignments; all assignments are due by the last week of the semester, see the web-assist site for more information
<b>Week 1</b>	<ul style="list-style-type: none"><li>• Introduction</li><li>• Objectives of the course</li><li>• What is Astronomy</li></ul>	Complete the Basic Skills Survey, do readings and watch the assigned Lab video.	<ul style="list-style-type: none"><li>• The Basic skills quiz will not be graded. Extra credit will be given for completing it.</li><li>• Chat session attendance required</li><li>• General Quiz</li></ul>
<b>Week 2</b>	<ul style="list-style-type: none"><li>• The Sky, Celestial Sphere and our place in the Universe</li><li>• Astronomical coordinate systems</li><li>• The tools used for Astronomy</li></ul>	Complete all of the assigned readings and watch the Lab videos.	<ul style="list-style-type: none"><li>• Whoever could not attend the chat session should email their available times to the instructor.</li></ul>

<b>Week 3</b>	<ul style="list-style-type: none"> <li>• Light and the Electromagnetic Spectrum</li> <li>• Atoms and the Atomic Spectra</li> <li>• The Doppler Effect</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 1.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion Forum 1.</li> </ul>
<b>Week 4</b>	<ul style="list-style-type: none"> <li>• The Sun and its structure.</li> <li>• Energy Sources and evolution of the Sun.</li> <li>• Sun Spots and observational description of the Sun.</li> <li>• Effects of the Sun upon Earth and the Planets.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 2.</li> </ul>	<ul style="list-style-type: none"> <li>• Quiz 1.</li> <li>• Discussion Forum 2.</li> </ul>
<b>Week 5</b>	<ul style="list-style-type: none"> <li>• The Family of Stars.</li> <li>• Star Distances.</li> <li>• Apparent brightness, intrinsic brightness and luminosity.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 3.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion Forum 3.</li> </ul>
<b>Week 6</b>	<ul style="list-style-type: none"> <li>• Star spectra.</li> <li>• Star sizes.</li> <li>• Star Masses.</li> <li>• Binary Stars.</li> <li>• The star atlas.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 4.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion Forum 4.</li> <li>• Quiz 2.</li> </ul>
<b>Week 7</b>	<ul style="list-style-type: none"> <li>• The formation and structure of Stars.</li> <li>• The Interstellar Medium.</li> <li>• The creation of Stars from the Interstellar Medium.</li> <li>• Young Stellar objects and Pro-tostellar disks.</li> <li>• Stellar structure and nuclear fusion.</li> <li>• Main-sequence Stars.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 5.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion Forum 5.</li> </ul>
<b>Week 8</b>	<ul style="list-style-type: none"> <li>• The death of Stars.</li> <li>• Giant Stars.</li> <li>• The death of lower main-sequence Stars.</li> <li>• The evolution of Binary Stars.</li> <li>• The death of Massive Stars.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 6.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion Forum 6.</li> <li>• Quiz 3, Mid-term.</li> </ul>
<b>Week 9</b>	<ul style="list-style-type: none"> <li>• Neutron Stars and Black Holes.</li> <li>• Neutron Stars.</li> <li>• Black Holes'</li> <li>• Compact Objects with disks and Jets.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 7.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion Forum 7.</li> </ul>
<b>Week 10</b>	<ul style="list-style-type: none"> <li>• The Milky Way Galaxy.</li> <li>• Discovery of the Galaxy.</li> <li>• Spiral Arms and Star formation.</li> <li>• The Nucleus of the Galaxy.</li> <li>• Origin and History of the Milky Way Galaxy.</li> <li>• The family of Galaxies</li> </ul>	<ul style="list-style-type: none"> <li>• Complete all of the assigned readings and watch the Lab videos.</li> <li>• You must post for Discussion Forum 8.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion Forum 8.</li> <li>• Quiz 4.</li> </ul>

	<ul style="list-style-type: none"> <li>Measuring the properties of Galaxies.</li> <li>The Evolution of Galaxies.</li> <li>Active Galactic Nuclei.</li> <li>Super massive Black Holes.</li> </ul>		
<b>Week 11</b>	<ul style="list-style-type: none"> <li>Modern Cosmology.</li> <li>An Introduction to the Universe.</li> <li>The Big Bang Theory.</li> <li>Space, Time, Matter and energy.</li> <li>Twenty-first century Cosmology.</li> </ul>	<ul style="list-style-type: none"> <li>Complete all of the assigned readings and watch the Lab videos.</li> <li>You must post for Discussion Forum 9.</li> </ul>	<ul style="list-style-type: none"> <li>Discussion Forum 9.</li> <li>Quiz 5.</li> </ul>
<b>Week 12</b>	<ul style="list-style-type: none"> <li>The origin of the Solar System.</li> <li>From the Big-bang to the Solar System.</li> <li>A survey of the Solar System.</li> <li>The origin of the planets.</li> <li>Planets orbiting other stars.</li> </ul>	<ul style="list-style-type: none"> <li>Complete all of the assigned readings and watch the Lab videos.</li> <li>You must post for Discussion Forum 10.</li> </ul>	<ul style="list-style-type: none"> <li>Discussion Forum 10.</li> <li>Quiz 6.</li> </ul>
<b>Week 13</b>	<ul style="list-style-type: none"> <li>The Planets of the Inner Solar System.</li> <li>A guide to the Terrestrial Planets.</li> <li>Earth.</li> <li>Earth's Moon.</li> <li>Mercury.</li> <li>Venus.</li> <li>Mars.</li> </ul>	<ul style="list-style-type: none"> <li>Complete all of the assigned readings and watch the Lab videos.</li> <li>You must post for Discussion Forum 11.</li> </ul>	<ul style="list-style-type: none"> <li>Discussion Forum 11.</li> </ul>
<b>Week 14</b>	<ul style="list-style-type: none"> <li>The Planets of the Outer Solar System.</li> <li>A guide to the Planets of the Outer Solar System.</li> <li>Jupiter.</li> <li>Saturn.</li> <li>Uranus.</li> <li>Neptune.</li> <li>Pluto and the Kuiper Belt.</li> </ul>	<ul style="list-style-type: none"> <li>Complete all of the assigned readings and watch the Lab videos.</li> <li>You must post for Discussion Forum 12.</li> </ul>	<ul style="list-style-type: none"> <li>Discussion Forum 12.</li> <li>Quiz 7.</li> </ul>
<b>Week 15</b>	<ul style="list-style-type: none"> <li>Meteorites, Asteroids and Comets.</li> <li>Meteoroids, Meteors and Meteorites.</li> <li>Asteroids.</li> <li>Comets.</li> <li>Asteroid and Comet impacts.</li> </ul>	<ul style="list-style-type: none"> <li>Complete all of the assigned readings and watch the Lab videos.</li> <li>You must post for Discussion Forum 13.</li> </ul>	<ul style="list-style-type: none"> <li>Discussion Forum 13.</li> </ul>
<b>Week 16</b>	<ul style="list-style-type: none"> <li>Astrobiology and Life on Other Worlds.</li> <li>The nature of life.</li> <li>Intelligent life in the Universe</li> <li><b>Final Exam</b></li> </ul>	<ul style="list-style-type: none"> <li>Complete all of the assigned readings and watch the Lab videos.</li> <li>You must post for Discussion Forum 14.</li> </ul>	<ul style="list-style-type: none"> <li>Discussion Forum 14.</li> <li>Final Exam.</li> </ul>

Final Grades will be posted in Moodle by 05 May 2012.

Or, go to <https://empower.ancilla.edu> and login to see your final grades after May 5<sup>th</sup>

Have a good Summer!